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Installation and User Manual

Liberator V1000

Revision 1.2

4Gon www.4Gon.co.uk info@4gon.co.uk Tel: +44 (0)1245 808295 Fax: +44 (0)1245 808299

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1 INTRODUCTION

1.1 Intended users

This manual is intended for all installation and service personnel who are involved in the planning, installation, operation and maintenance of the Liberator V1000 equipment. Although the Liberator V1000 Link is designed for easy installation and setup, optimum performance can be achieved by following the procedures outlined in this manual.

1.2 Revision

Sub10 Systems reserves the right to revise this documentation periodically without any obligation to provide notification of such revision or changes.

1.3 Prior knowledge

This manual assumes that the installer has at least a basic experience and understanding of networking equipment, as well as some familiarity with its configuration and operation. The information covered in this manual should be fully understood prior to installation.

1.4 Warranty

Sub10 Systems warrants to the original end user (purchaser) that this product is free from any defects in materials or workmanship for a period of up to 24 month (2 Years) from the date of shipment to the end user. During the warranty period and upon proof of purchase, should the product show indications of failure due to faulty workmanship and/or materials, Sub10 Systems will, at its discretion, repair or replace the defective products or components without charge for either parts or labor and to whatever extent it shall deem necessary to restore the product or components to full operating condition. Any replacement will consist of a new or remanufactured, functionally equivalent product of equal value, and will be offered solely at the discretion of Sub10 Systems.

This warranty shall not apply if the product is modified (e.g. warranty seal is broken), misused, tampered with, damaged by an act of God, or subjected to abnormal working conditions. To obtain services under this warranty, contact Sub10 System's Service Centre. Products must be returned postage prepaid. It is recommended that the terminal be insured when shipped. Any products returned without either proof of purchase or with an outdated warranty will not be repaired or replaced. The customer will be billed for parts and labor. All repaired or replaced products will be shipped by Sub10 Systems to the corresponding return address 'postage paid'. If the customer specifies an alternative return destination where additional costs are incurred, the customer shall bear the cost of the additional return shipment cost. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

1.5 Copyright / Disclaimer

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2.1 General description

The Liberator V1000 system operates as a data link in the unlicensed 60 GHz band between 57 GHz and 64 GHz.

Measuring only 18cm x 18cm (7" x 7"), Liberator V1000 delivers full duplex data at a rate of up to 1000 Mbps over a distance of up to 800m.(2600 ft)

For more detailed technical data see appendix A.2.

2.1.1 Benefits

- Easy installation – The concept of the Liberator V1000 Link allows to the end user to install it as easy as any other network component.
  The single cable solution reduces the complexity of the installation. The terminal is connected to the network, monitored and supplied with power through a single outdoor rated CAT 6 Ethernet cable.
  A visual alignment tool together with an alignment bracket allows the user to easily install the link. Immediate operation without the need for additional configuration is granted.
- Network performance – Guaranteed full duplex at 1000 Mbps along the complete range. Unlike typical WLAN equipment the user can transmit a full 1000 Mbps over the link.
- License free operation – The system has been approved and can be operated in many countries.
- System administration – To monitor the status and the traffic, the user can access the link statistics either via the HTML user interface or by integrating it into a network management tool via SNMP.
- Security – The proprietary radio interface does not allow any other system to access the 60 GHz transmitted data.
- A high level of data security is inherent in the product via signal absorption by atmospheric oxygen and the use of high gain/narrow beam-width antennas.

2.1.2 Applications

- LAN extension
- Redundant access
- Campus connectivity
- Disaster recovery •Wireless backhaul
- Centralization of IT infrastructure
- Temporary connections during events
- Mesh, hub and spoke configuration

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2.2 Package contents

A complete link is packed in one box. The box contains the following:

- Terminal A
- Terminal B
- Adjustable Alignment Brackets
- Pole Clamps
- Sealed Ethernet connectors
- Ice bridges /Sun-Shields
- POE+ injectors and leads
- Fixing and accessory kit

2.2.1 Terminals

Each terminal combines the antenna and the transmitter and receiver. Each terminal is connected to the network via a standard Cat 5e Ethernet cable with RJ-45 connectors.

Power is supplied to the terminal through the Ethernet cable. This will require either compatible network equipment or a POE+ injector.

2.2.2 Wall-Mount/Alignment Bracket

The wall mount bracket facilitates easy radio alignment owing to its independent axis's. It has coarse and fine alignment capabilities.

2.2.3 POE+ Injector

The terminal is powered via an Ethernet cable according to the IEEE 802.3at POE+ standard. Should the network equipment connected to the Liberator V1000 Link not offer POE+, a power injector can be inserted in line with the Ethernet cable.

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2.2.4 Mast Bracket

The mast bracket is used to mount the bracket onto a mast. The bracket is suitable for any pole diameter from 50 mm to 115 mm (2” to 4.5”).

2.2.5 Ice Bridge/Sun-Shield

The ice bridge offers additional protection for the terminal against rain, snow and ice-formation

2.3 Accessories and Spares

2.3.1 Optical Alignment Tool

The optical alignment tool provided is easily mounted on the terminal using the locator pins and large thumbscrew. It enables both ends of the link to be aligned quickly, simply and independently.

2.3.2 Surge Arrestor

The surge arrestor is placed between the radio head and the Ethernet cable connecting to the POE and any other network infrastructure. This device helps to reduce the risk of damage from lightning or high tension overhead equipment. Sub10 do not supply an arrestor but can recommend preferred suppliers.

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3 SITE PLANNING

All installers must perform a full site inspection and plan carefully prior to the physical installation of a Liberator V1000 system.

This preparation must include:

- Evaluating the most appropriate location for the installation of the terminal.
- Identifying an appropriate mounting structure (wall or mast) for each terminal.
- Planning the cable routing from the network component to the terminal.

3.1 Terminal location

When selecting the best terminal location the following factors should be considered:

- Accessibility (e.g. roof)
- Type of mounting (e.g. wall or pole)
- Grounding connection point
- Cable runs (max. 100 m / 328 ft)
- Line of sight

3.2 Line of sight

To ensure a clear line of sight, there must be no obstructions between the two terminal locations. The required clearance can be established visually or by using the following table[1]:

3.3 Link distance / Link availability

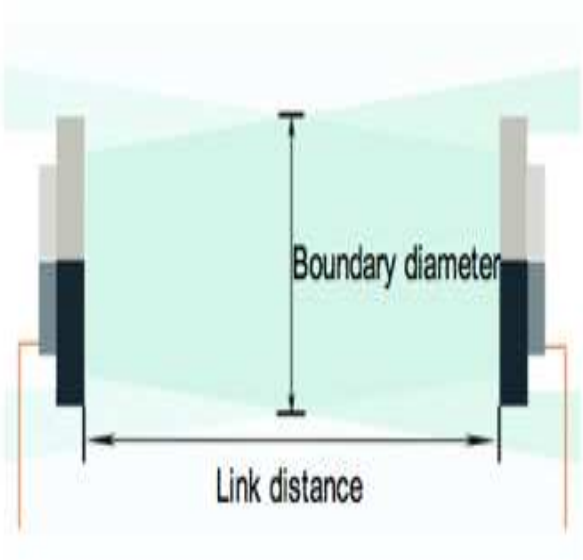
The link distance is directly related to the weather conditions. The affordable link availability is influenced by the following environmental conditions:

- Rainfall:- the lower, the better
- Temperature:- the higher, the better
- Air pressure:- the lower, the better

Knowledge of the link distance (line of sight) is important in estimating link quality.

For the rain regions in your country, see appendix A.4.

Link Distance		Boundary Diameter	
100 m	(328 ft)	0.7 m	(2.3 ft)
200 m	(656 ft)	1.0 m	(3.3 ft)
400 m	(1312 ft)	1.4 m	(4.6 ft)
600 m	(1968 ft)	1.7 m	(5.6 ft)
800 m	(2625 ft)	2.0 m	(6.6 ft)



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3.4 TERMINAL MOUNTING OPTIONS

3.4.1 Wall mounting

The wall mounting location should be strong enough to secure the terminal to the wall, taking into account all foreseeable environmental conditions (e.g. wind, rain, ice).

Depending on the material to which the bracket is mounted, differently sized mounting hardware may be necessary. To mount the terminals onto the bracket use the enclosed M6 bolts. The bracket allows a tilt angle of +/- 50° in both axis.

3.4.2 Pole mounting

The mast mount bracket will be needed to mount the terminal onto poles with diameters from 50 mm to 115 mm (2” to 4.5”).

3.5 Cabling

The terminal is delivered with an Ethernet cable terminated with a RJ-45 connector. To connect the Liberator V1000 Link to your network, use a Cat 5e Ethernet cable with a maximum length of 100 m to the next network node. Please verify that the cable used is designed for outdoor environments (e.g. water, solar UV). Since the power is supplied by the Ethernet cable, please make sure that network equipment used supports Power over Ethernet Plus (POE+).

3.6 Grounding / Lightning protection

The terminal must be properly grounded to provide protection against voltage surges.

In the event of a short circuit or lightning strike, effective grounding can prevent damage to building, equipment, infrastructure and personnel. For installations in the USA, refer to Article 830 of the National Electrical Code (Network-powered broadband communications systems). For all other countries, implement protection in accordance with the safety standards and regulatory requirements of the country in which the equipment is installed.

Sub10 Systems strongly recommends the use of outdoor lightning protectors

3.7 Co-located applications

Owing to the compact size of the Liberator V1000 integrated terminal, it is particularly suitable for co-sited applications.

Possible configurations include:

- Back-to-back - doubles the link distance
- Parallel link - doubles data capacity or redundancy
- Star - hub and spoke

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4 INSTALLATION

Owing to the small size and integrated design of the Liberator V1000 Link, its correct installation and setup is relatively simple.

Nevertheless, when working on a roof, ladder, mast or staging, please take extreme care, observing all facility and OSHA (or other applicable regulatory agency) required safety precautions.

4.1 Mount installation

4.1.1 Wall mount

The wall and mounting screws must be able to support a weight of 11 pounds (5 kg), taking into account associated wind and potential ice loading factors.

Please note that the wall mount must be installed with the proper orientation as shown below.

4.1.2 Mast mount

- Ensure that the mast used has a diameter of between 50 mm to 115 mm (2” to 4.5”).
- Fasten the mast bracket onto the mast using the enclosed stainless steel screws, nuts and washer (M6).
- Fasten the alignment bracket onto front part of the mast bracket using the enclosed stainless steel screws, nuts and washer (M6).

Do not use zinc plated screws as these will corrode and endanger link performance and safety to people and equipment.

4.2 Terminal installation

It is important to install the terminal on the bracket with the same orientation (antenna polarization) at both ends of the link. The terminals must be mounted on the bracket in such a way that the polarization arrows point in the same direction. The terminal must be mounted on the bracket by using the enclosed stainless steel screws (M6 x 12).

Note: Do not use zinc plated screws as these will corrode and endanger link performance and safety to people and equipment.

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4.3 Cable installation

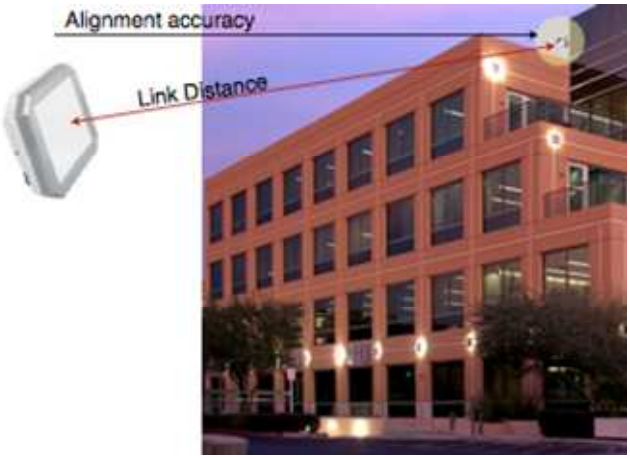
The length of the cable from the terminal to the next network component may be up to 100 m (328 ft), but should be kept as short as practical in order to reduce voltage drop and signal loss. All Ethernet cables must be CAT 5e compliant and suitable for outdoor use. The cable must be UV stable and UL approved and must comply with local and/or national building codes.

4.4 Antenna alignment

One of Liberator V1000 biggest advantages is its fast, easy alignment procedure. The terminals can be coarse aligned optically by using the alignment tool. Electrical alignment is then used to optimize performance.

The table below shows alignment tolerance:

Link Distance		Alignment Accuracy	
100 m	328 ft	0.9 m	2.9 ft
400 m	1312 ft	3.5 m	11.5 ft
600 m	1968 ft	5.2 m	17.2 ft
800 m	2625 ft	7.0 m	22.9 ft



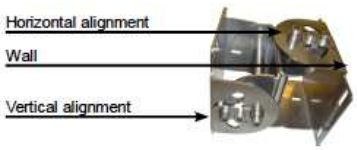
4.4.1 Alignment Procedure

The following procedure achieves fast, accurate alignment (for all operations, the supplied 5 mm Allen key can be used):

4.4.1.1 Optical alignment

Place the alignment tool on the most accessible corner of the radio unit and ensure good visibility to the opposite terminal by rotating the viewfinder.

Loosen the horizontal lock screws (labelled “3”)

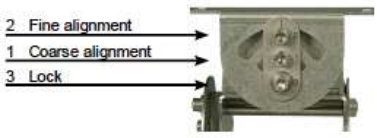


Place the horizontal axis course screw in its middle position (needle).

Carry out a rough alignment on the horizontal axis and fasten the screw (labelled “1”).

Repeat steps b), c) and d) for the vertical axis.

Turn the horizontal course screw (labelled “2”) by viewing through the telescope and carrying out the fine alignment.



Repeat e) for the vertical axis.

If necessary, repeat the fine alignment procedure e) for both axes until the opposite link is correctly aligned.

Fasten the lock screw (labelled “3”) on both horizontal and vertical axes.

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4.4.1.2 Power level alignment

Following optical alignment, an alignment based on the received power level of each terminal should be done. Use a voltmeter and cable with a female QMA connector to attach to the QMA connector on the terminal. Follow points 2 to 9 of the procedure for optical alignment to obtain maximum voltage from each terminal.

A power level of -60dBm is better than a power level of -70dBm

4.5 Grounding

The terminal must be properly grounded.

Two screws are provided on the rear housing of the terminal to facilitate the correct grounding. To fasten the grounding cable onto the terminal, use a screw post and serrated washer combined with an M8 nut.
Connect the terminal to the connection points nearest to the building-to-earth ground point. The grounding conductor must be as short as is practical and should not exceed 6 m (20 ft). For installations in the USA, refer to Articles 830 of the National Electrical Code (Network- powered broadband communications systems). For installations in all other countries, refer to the safety standards and regulatory requirements.

4.6 Lightning / Surge protector

Sub10 Systems strongly recommends the use of outdoor data line protectors.

To protect humans and property, a lightning/surge protector must be installed before the power cable enters the building.

4.7 Power injector

The power injector is connected in-line with the data line. The maximum distance between the POE injector and the Liberator V1000 Link is 100 m (328 ft)

The POE injector must be IEEE 802.3at compliant (POE+). To check that the injector is functioning correctly, use a POE Tester.

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5 TERMINAL MANAGEMENT AND MONITORING FUNCTIONS

The Liberator V1000 Link is configured from the factory with default IP addresses as shown below. Use a PC or laptop to change these defaults by connecting to the terminal with the appropriate IP. Every terminal is labelled with its terminal type (A or B).

The factory default values are:

Terminal	IP Address	Subnet Mask	Username	Password
A	192.168.1.21	255.255.255.0	admin	admin
B	192.168.1.22	255.255.255.0	admin	admin

To communicate with the terminal, ensure that the IP address of the computer used is not allocated automatically by a DHCP server. Configure the IP address of the computer manually (e.g. IP 192.168.1.100 with subnet mask 255.255.255.0). Ensure that your web browser is not using any proxy server settings.

Note: The IP address settings have no effect on data connectivity. These settings are only needed to access and monitor the terminal. Once the terminal is configured for your network, a PC with a static IP may no longer be needed. If the terminal is on your local network, it can be browsed from any available PC.

5.1 Web browser interface

A web browser can be used to access and change user defined settings on the Liberator V1000 Link. All information is contained on one screen that is divided into five sections – Overview, Wireless Network, System, Status and Administration.

5.1.1 Overview

This screen shows an overview of key link information including, but not limited to, serial number, MAC address, firmware version, terminal type, temperature, and received power level.

5.1.2 Wireless

The wireless screen is divided into wireless setup and wireless status.

Setup gives the Terminal type (A or B), transmit and receive frequencies and the transmit power. The transmit power can be changed between four settings depending on the distance between terminals. Make sure to click the ‘Apply’ button for changes to take effect.

Status shows the wireless data rate, temperature, received power, and RSSI voltage. The status section also has a horizontal bar which is a graphical representation of RSSI voltage.

5.1.3 Network

The network configuration screen allows the user to change network settings as required. Link settings which can be changed are IP address, subnet, and gateway. The IP address settings have no influence on data connectivity. Please click the ‘Apply’ button to save any changes made on this screen.

This screen also displays the terminal’s MAC address and MDI Setting.

Note: MDI is automatic and in not changeable.

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5.1.4 System

The system screen, divided into three sections is an all-important screen for SNMP settings.

The first section gives the terminal's serial number.

The second section of the system screen is where you change the system name and location, add read and write community settings and enter the IP address to send system alerts.

The third section of this screen is for enabling or disabling alerts and set the temperature high and low limits for triggering an alert.

Note: The temperature alert is enabled separately.

As on previous screens, click the 'Apply' button for changes made to take effect.

5.1.5 Status

The status screen like the overview screen is an information only screen showing the temperature of the terminal and the wireless data rate. Additional information will be added in the next software revision.

5.1.6 Administration

Updating the terminal with a new release of software is accomplished via the Administration screen. This screen shows the current firmware version and has a button for you to choose the file to upload, another button to upload the chosen file and a third to actually process the update.The buttons:

Choose File: Click on this button to browse for the firmware to upload The selected firmware update file is displayed

Upload Click this button to upload the new firmware to the terminal. The MD5 hash number for the file is displayed

Update Click this button to actually run the firmware update . A message indicating the time to process the update is displayed

Note: After the update is completed please re-access the terminal by typing in its IP address. Confirm the new firmware was updated successfully by noting its version number on the Overview screen.

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5.2 SNMP interface

Liberator-MIB V1000

1.3.6.1.4.36043.4

Object		OID	OID type	Description
...enterprises.mini.info 36043.4.1				
	terminalType	10	DisplayString	Indicates if this unit is an A or a B terminal
	temperature	20	DisplayString	This unit's internal temperature in degrees Celsius
	rxPowerLevel	30	DisplayString	This unit's current received power measured at the MWU
	txPowerLevel	40	DisplayString	This unit's enumerated transmit power level 1 to 4 1 = lowest, 4 = highest
	systemVersion	60	DisplayString	This unit's system firmware version
...enterprises.mini.controls 36043.4.2				
	trapSwitch	10	Integer32	Whether to allow this unit to generate traps 0 is No, any other value is Yes
	trapTarget	20	Integer32	The IP address to which this unit will direct it's trap messages, when traps are enabled, in compressed (integer) form
	trapTempsSwitch	30	Integer32	Whether to allow this unit to generate temperature traps 0 is No, any other value is Yes; trapSwitch must also be set to allow traps to be generated for this setting to work
	lowTempLimit	40	Integer32	The lower threshold below which this unit should generate a low temperature trap
	highTempLimit	50	Integer32	The upper threshold beyond which this unit should generate a high temperature trap
...enterprises.mini.traps 36043.4.5				
	lowTempTrap	10		This trap indicates the unit's internal temperature has fallen below the lower limit indicated in lowTempLimit
	highTempTrap	20		This trap indicates the unit's internal temperature has risen above the upper limit indicated in highTempLimit

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A TECHNICAL INFORMATION

A.1 Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the Liberator V1000. It covers various aspects of installation and network setup.

> Note:
> Each of the following points must be checked at both ends of the link. Start by running the entire procedure on one side (e.g. Terminal A). If this does not solve the problem, repeat all the steps at the opposite terminal.

A.1.1 Power and network connection

You must verify that the terminal is connected to the power. The POE injector must be installed and plugged in. Go to the terminal, disconnect the RJ-45 connector and verify if there is power in the cable using a standard POE tester.

Take the cable and plug it into a notebook or a network testing device and verify that there is a valid network connection. If there is any problem, please replace the cable and validate the connection again.

A.1.2 Network configuration

Check that the PC's IP address is in the same range and subnet as the Liberator V1000.

Note: The default IP address of the Liberator V1000 is 192.168.1.21 and 192.168.1.22 for terminal A and B respectively. All terminals on the network must have a unique IP address in the same range, e.g. 192.168.1.X. Any terminal with identical IP addresses will not be visible on the network. They must all also have the same subnet mask (e.g. 255.255.255.0).

Ping the terminal to make sure that the Liberator V1000 is responding. Go to Start → Run → Type "Command" → Type "ping 192.168.1.21/22". A successful ping will generate four replies. As soon as the network configuration is correct you can access the GUI (Graphical User Interface) and check the settings according to section 4.9.

A.1.3 Misalignment

On the wireless screen (see section 5.1.2) you see the signal strength in dBm (e.g. -30 dBm). If the value is below -75dBm the receiver is not in the correct position to track the signal. You therefore need to re-align the terminal to its opposite terminal (please follow the instructions in section 4.4.1).

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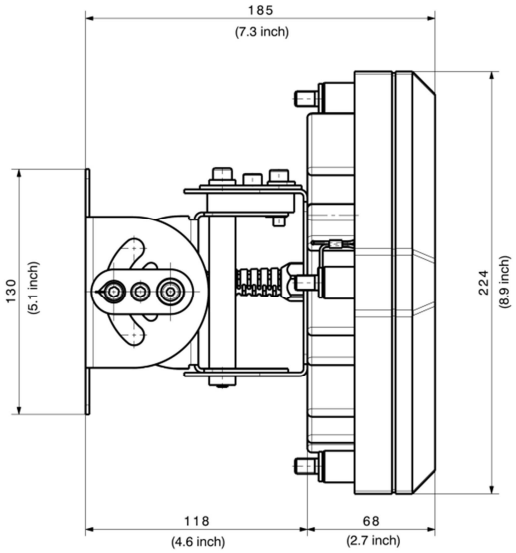
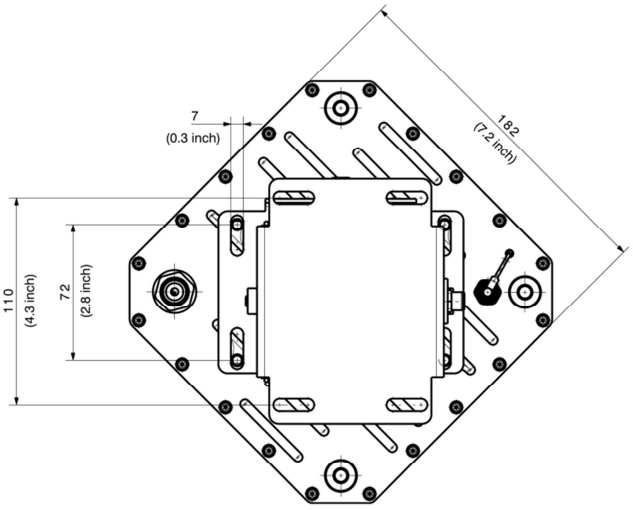
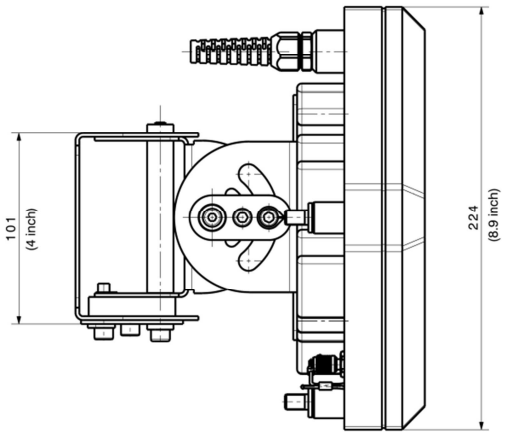
A.2 Specifications







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General system information

- Transmission Capacity: 1000 Mbps full duplex
- Interfaces: 1000 Base-T
- Latency: < 50 µs + distance (1 µs / 300 m)
- Range*: up to 800 m (2600 ft)
- Availability*: up to 99.999%
- Warranty: 2 year
- Connection
  - Cable Length: max. 100 m (300 ft)
  - Signal Wires: CAT 5e
  - Connector: RJ-45(male; including outdoor Ethernet seal kit)
- Mechanical data
  - Dimension 162 mm x 162 mm x 89 mm (6.4” x 6.4” x 3.5”)
  - Weight 3500 g (7.7 lb.)
- System administration
  - Management: SNMP
    Web browser based configuration
- Power supply
  - Standards: Compliant with Power over Ethernet according to IEEE 802.3at
  - Working Temperature **: - 45 ˚C ... + 55 ˚C (- 49 ˚F … + 131 ˚F)
- Storage Temperature: - 30 ˚C … + 55 ˚C (- 22 ˚F … + 131 ˚F)
- Wind Load: operating 160 km/h (100 mph)
  survival 200 km/h (125 mph)
- Regulatory
  - Regulatory Compliance:
    FCC Part 15
    Industry Canada RSS210
    ETSI Conformity
    R&TTE Directive 1999/5/EC
    CE Conformity

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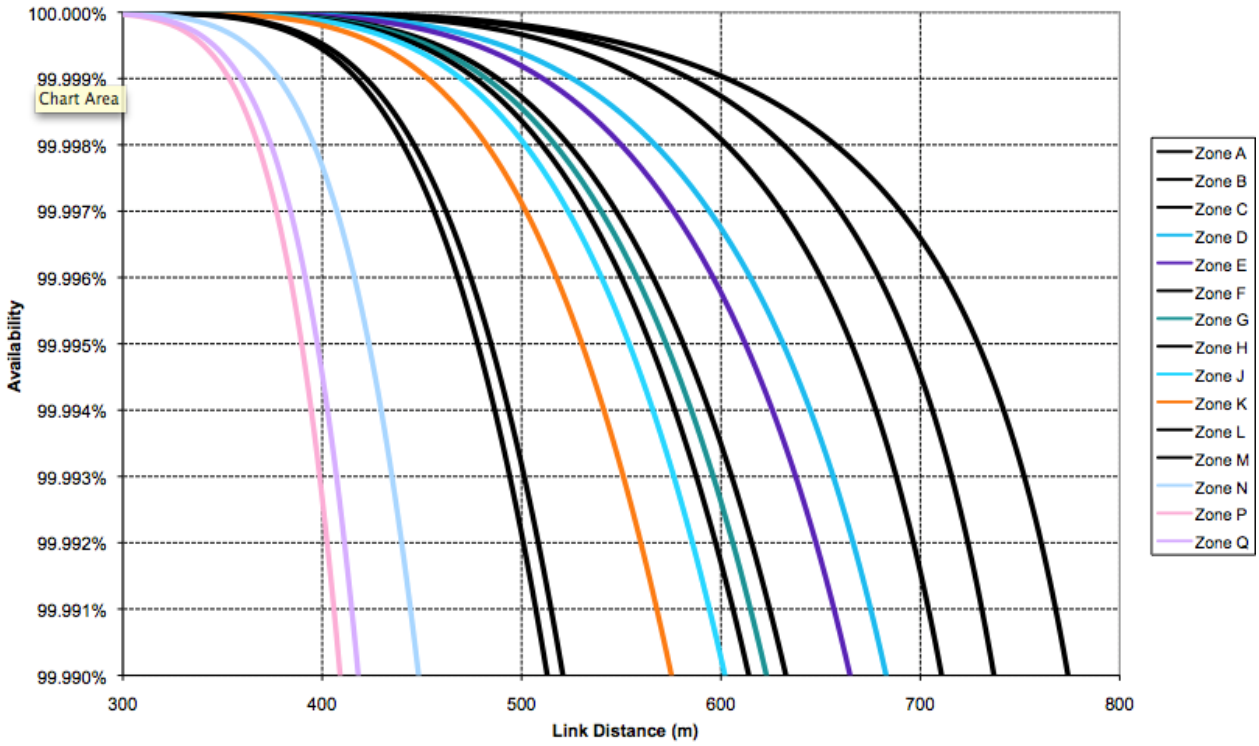
A.2.1 Availability / Rain Zone / Link Distance

The link distance is directly related to the weather conditions. The table below refers to a link working at a distance of up to 800m (2600 ft) (Liberator V1000), for ITU Rain Regions A to Q.



(Liberator V1000): Please also refer to the maps on section A3.

Availability	Rain zone * Link Distance (m)														
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
99%	797	789	785	764	787	770	752	765	701	772	765	741	730	669	597
99.9%	765	752	730	701	719	701	669	684	618	669	648	607	549	461	446
99.99 %	701	669	648	624	607	578	569	561	549	524	473	466	405	343	376
99.999 %	607	561	524	524	450	434	461	425	486	397	338	370	312	268	320

* Rain zone according to ITU-R Recommendation PN.837-1
99.9% availability equates to 526 minutes per year of outage due to heavy rains.
99.99% availability equates to 53 minutes per year of outage due to heavy rains.
99.999% availability equates to 5 minutes per year of outage due to heavy rains.

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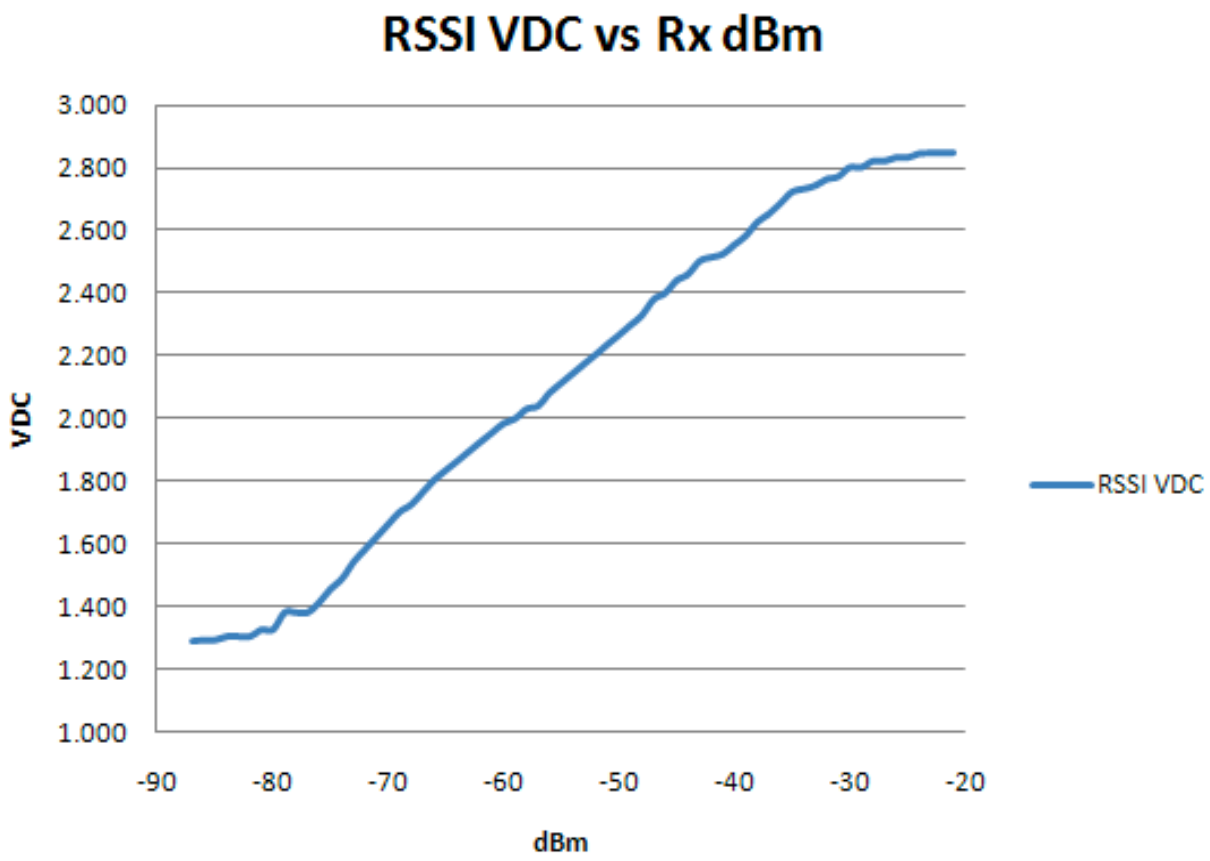
A.2.2 RSSI DC Voltage vs Received dBm



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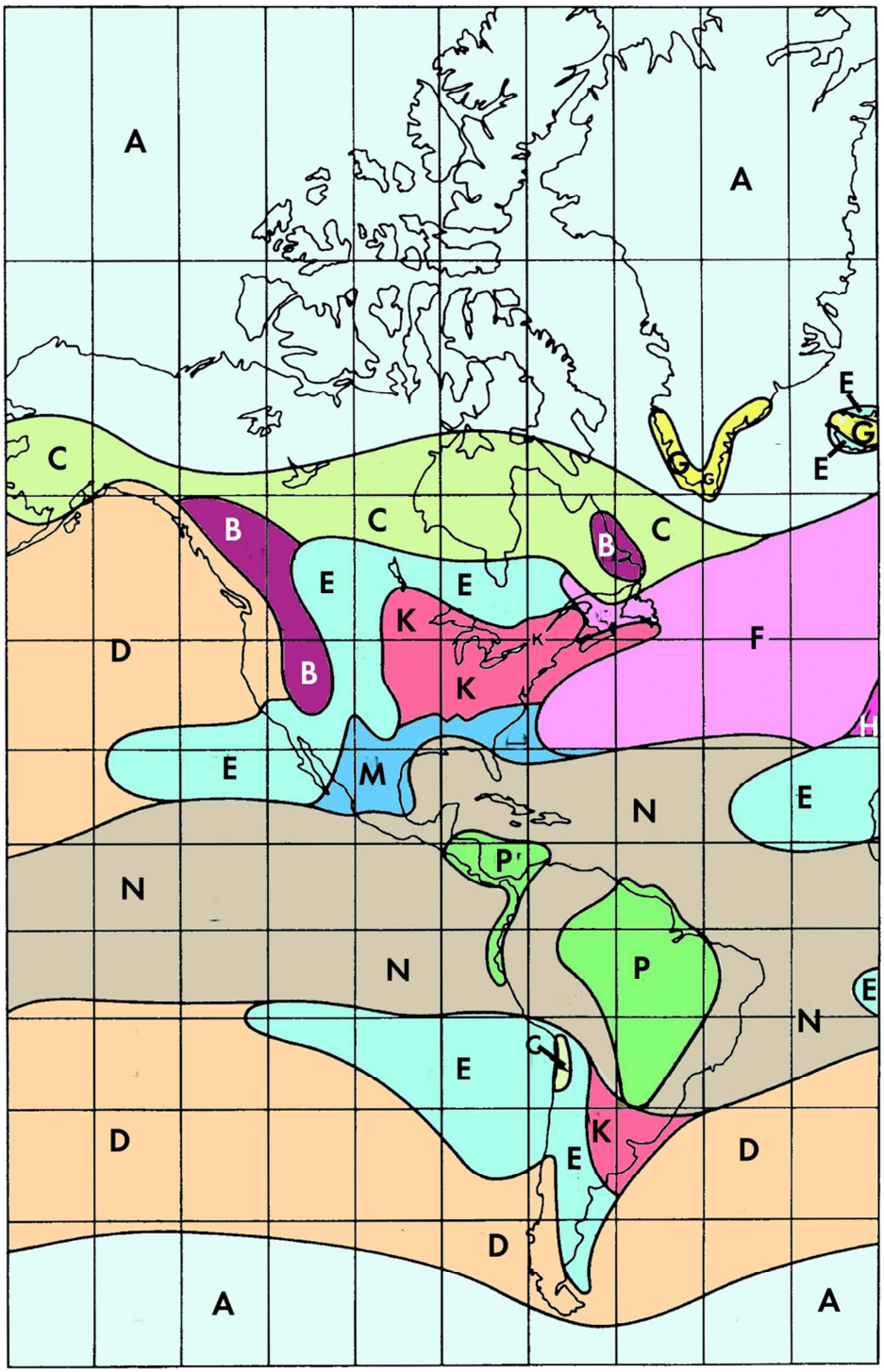
A.3 ITU Rain Areas



Map of Americas

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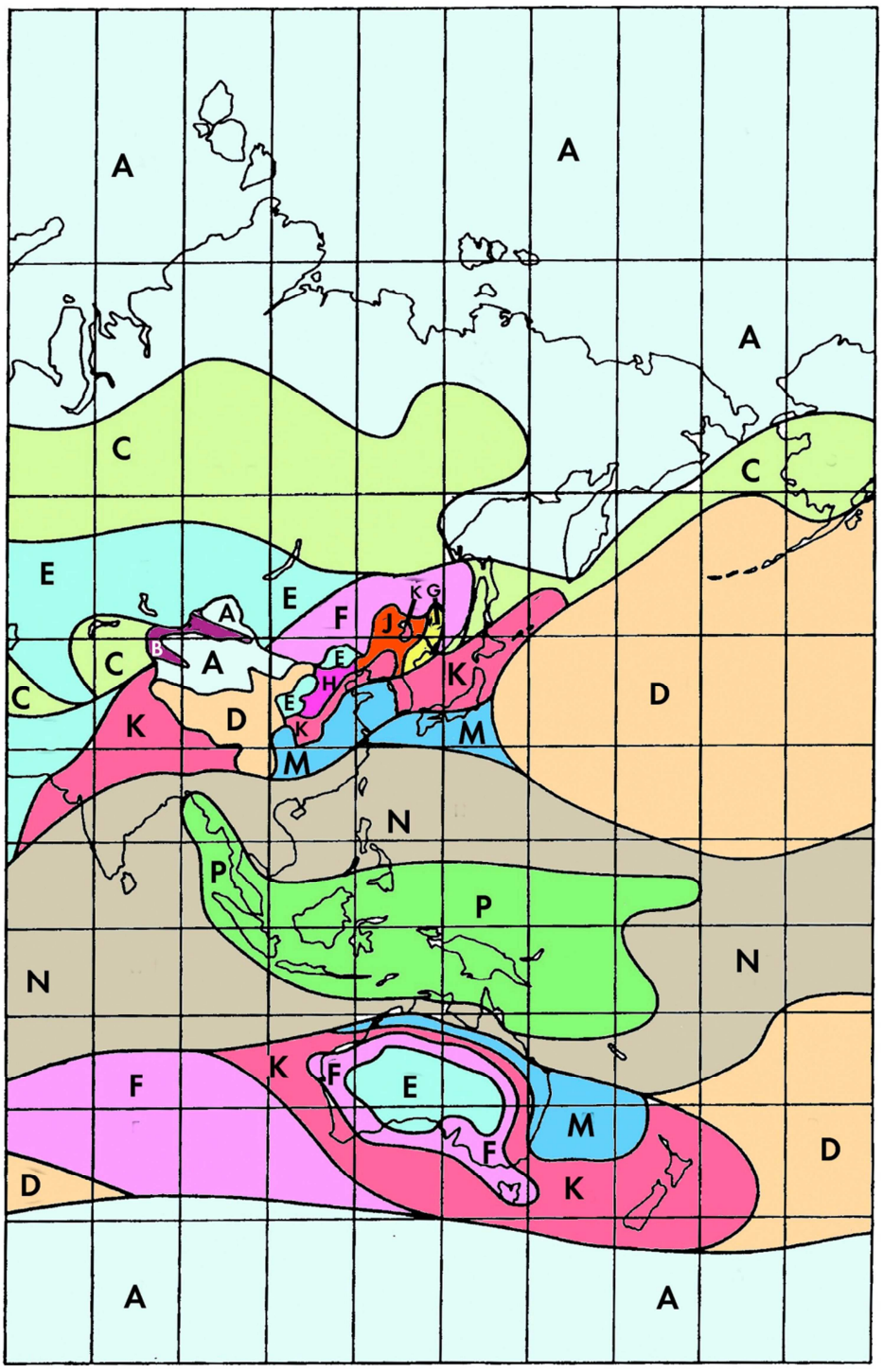

Map of Asia and Australasia

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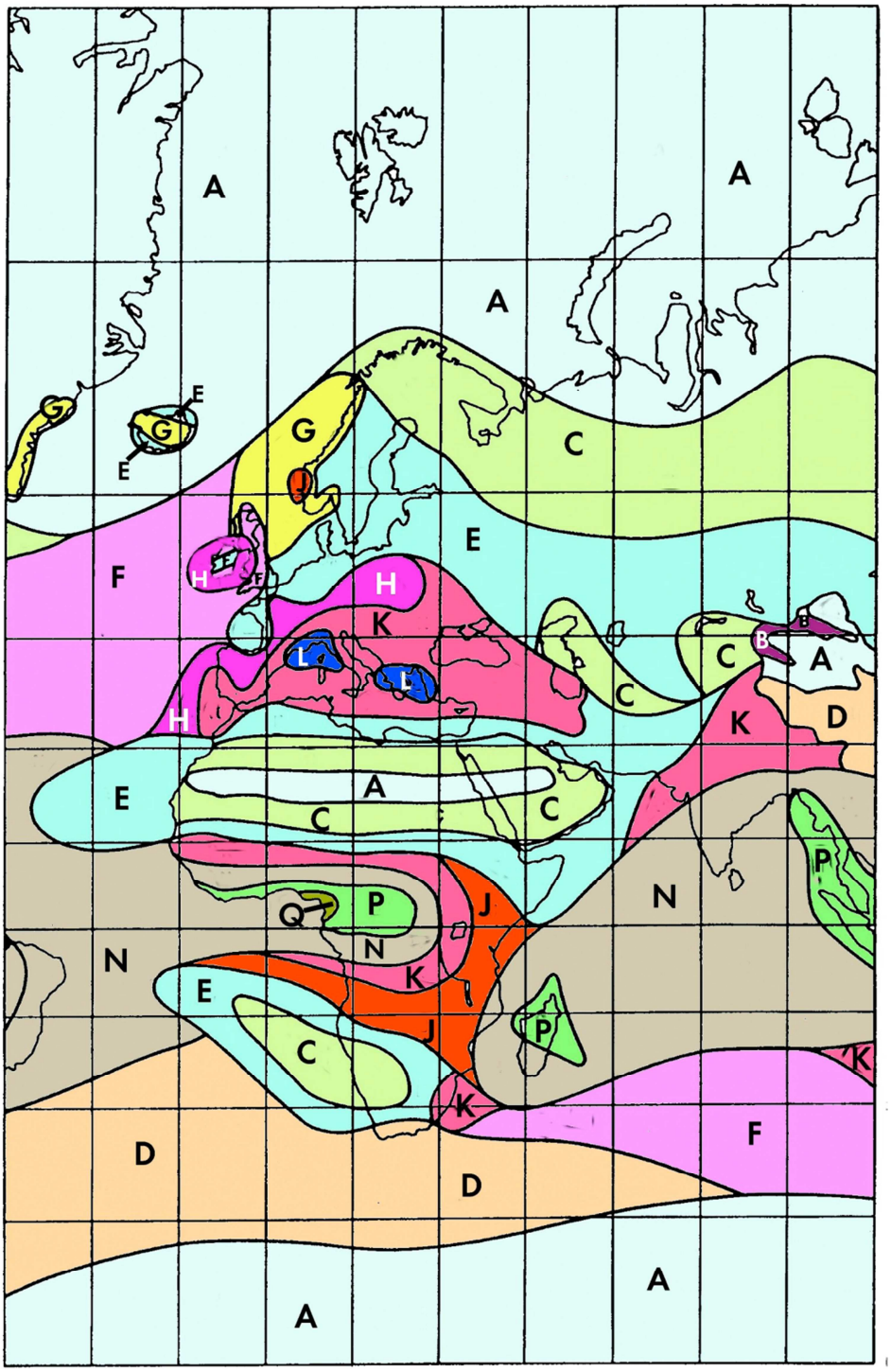

Map of Europe, Middle East and Africa

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B REGULATORY INFORMATION

B.1.1 FCC statement

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

FCC NOTICE: To comply with FCC part 15 rules in the United States, the system must be professionally installed to ensure compliance with the Part 15 certification.
It is the responsibility of the operator and professional installer to ensure that only certified systems are deployed in the United States.
The use of the system in any other combination (such as co-located antennas transmitting the same information) is expressly forbidden.
RF Exposure: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

FCC ID: ZI9-A060

B.1.2 ETSI Conformity

ETSI EN 301 489-4 V1.3.1 (2002): Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 4: Specific conditions for fixed radio links and ancillary equipment and services

ETSI EN 302 217-3 V1.3.1 (2009-07): Harmonized European Standard (Telecommunications series) Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 3: Equipment operating in frequency bands where both frequency coordinated or uncoordinated deployment might be applied; Harmonised EN covering the essential requirements of article 3.2 of the R&TTE Directive

ETSI EN 302 217-4-2 V1.4.1: Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 4-2: Harmonised EN covering essential requirements of Article 3.2 of the T&TTE Directive for antennas

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B.1.3 Industry Canada statement

Operation is subject to the following two conditions:
1. this device may not cause interference, and
2. this device must accept any interference, including interference that may cause undesired operation of the device.
This Class B digital apparatus complies with Canadian ICES-003.

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment.

Son fonctionnement est soumis aux deux conditions suivantes:
1. Ce dispositif ne peut causer des interférences, et
2. Ce dispositif doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.
Cet appareil numérique de classe B est conforme à la norme canadienne ICES-003.

Cet équipement est conforme à l'exposition aux rayonnements IC RSS-102 des limitesdéfinies pour un environnement non contrôlé.

IC: 9662A-A060

B.1.4 CE – Declaration of conformity

We, Sub10 Systems declare that the product Liberator V1000 is in conformity – after consultation with the notified body Compliance Testing LLC – with the following standards and normative documents:
• EN 50371 (2002): Generic standard to demonstrate the compliance of low power electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (10 MHz - 300 GHz)
• EN 55022 (2006): Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
• EN 55024 (1998): Information technology equipment - Immunity characteristics - Limits and methods of measurement
• EN 60950-1 (2006): Information technology equipment - Safety -- Part 1: General requirements
• ETSI EN 302 217-3 V1.3.1 (2009-07): Harmonized European Standard (Telecommunications series) Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 3: Equipment operating in frequency bands where both frequency coordinated or uncoordinated deployment might be applied; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive
• ETSI EN 302 217-4-2 (2007): Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 4-2: Harmonized EN covering essential requirements of Article 3.2 of R&TTE Directive for antennas is in accordance with the following Directives:
• R&TTE Directive 1999/5/EC
• ETSI EN 301 489-4: Fixed Radio Systems used within telecommunications and broadcast networks. Electromagnetic compatibility and radio spectrum matter (ERM); Electromagnetic compatibility (EMC) standard for radio equipment.

We hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all essential requirements of the Directives.

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C CONTACTS

C.1 Technical assistance

Please visit

http://www.sub10systems.com

Or Contact - support@sub10systems.com

Our Address

Sub10 Systems Limited
Ash House
Canal Way
Kingsteignton
Newton Abbot
TQ12 3RZ

4Gon www.4Gon.co.uk info@4gon.co.uk Tel: +44 (0)1245 808295 Fax: +44 (0)1245 808299